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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/902,425	07/10/2001	Michael A. Serio	AFU-20	7678

7590

05/18/2006

LAW OFFICE OF IRA S. DORMAN  
330 ROBERTS STREET, SUITE 200  
EAST HARTFORD, CT 06108

EXAMINER
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PATEL, VINIT H

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/902,425

Applicant(s)

SERIO ET AL.

Examiner

Vinit H. Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10 and 12-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10 and 12-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau. (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

#### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 13, 2006, has been entered.

#### ***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 10, 12-13, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chittick (USP 4,421,524) in view of Moriarty et al. (USP 5,993,751), Chambert, (USP 4,232,633) and Bayer (USP 5,114,541).

Regarding claims 10, 12-13, 17, and 18 Chittick discloses a power generation system, comprising; a gas-fueled power generator (C1/L32-47 & C5/L64-C6/L4); two-stage reaction apparatus for producing a fuel gas product from a hydrocarbonaceous material, operatively connected to supply fuel gas to said power generator (C2/L7-55 & C5/L1-C6/L4); said reaction apparatus being constructed for effecting a process comprising the following steps, carried out: (a) introducing a non-gaseous hydrocarbonaceous material into a pyrolysis chamber, comprising a first stage of said apparatus, and pyrolyzing the hydrocarbonaceous material therein so as to produce a primary fuel gas mixture, a pyrolysis liquid, and a first carbonaceous residue (C3/L1-

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C6/L4); (b) introducing the primary fuel gas mixture and the pyrolysis liquid into a second chamber, comprising a second stage of said apparatus and containing a catalyst, and heating said liquid therein in a substantially non-oxidizing atmosphere, to a temperature of about 900° to 1100° C and substantially above the temperature at which pyrolysis is effected in step (a), so as to produce additional fuel gases and additional solid carbonaceous residue, without substantially altering the composition of the primary fuel gas mixture (C3/L1-C6/L4); (c) withdrawing the primary fuel gas mixture and the additional fuel gas from said second chamber wherein said second chamber contains a catalyst in a fixed bed reactor (C4/L61-68 & C3/L61-68; C3/L1-C6/L4); and (d) introducing air, oxygen, carbon dioxide or steam into each of said chambers to effect reaction with, and at least partial removal of, said carbonaceous residue therein (C4/L61-68).

While Chittick does not explicitly disclose a non-consumable catalyst, means for controlling the flow of fuel gas from said reaction apparatus to said generator, said means are inherent in the system of Chittick.

Chittick does not explicitly disclose means for controlling the steps of the process by monitoring the formation of products.

Bayer (C2/L7-20) establishes equivalency of catalysts used by Chittick with silica gel-based catalyst and therefore would inherently be a non consumable catalyst. As instant specification is silent to unexpected results, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the catalyst of Chittick with silica gel-based catalyst, since such modification would have involved a mere substitution of known equivalents. A substitution of known equivalents is generally

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recognized as being within the level of ordinary skill in the art.

Moriarty et al. teaches that varying process conditions will affect product composition (C3/L20-27, C3/L66-C4/L2, C6/L55-C7/L3), a system for controlling product composition will inherently include data processing means for controlling the steps of the process.

It would have been obvious to one having ordinary skill in the art at the time of the invention to use data processing means for controlling the steps of the process, as taught by Moriarty et al., in the system of Chittick, for the purpose of increasing system flexibility and improving operation efficiency by allowing production of products having desired composition.

Chambert discloses that a reactor system can be based on data processing via computer to control fuel, air and temperature (C7/L3-14), and therefore inherently control monitor formation of at least gas phase product such as hydrogen, carbon dioxide and carbon monoxide, via control of the processing steps in the reactor, and it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chittick with Chambert to the purpose to provide greater control of the reactor system (C7/L3-14).

Regarding limitations recited in claims 10 and 12-13 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions

relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

3. Claims 14-16, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chittick (USP 4,421,524) in view of Moriarty et al. (USP 5,993,751), Chambert (USP 4,232,633) and Bayer (USP 5,114,541), and further in view of Admitted Prior Art.

Regarding claims 14-16, 19 and 21, the combined references of Chittick in view of Moriarty et al., Chambert and Bayer do not explicitly disclose said data processing means implementing an artificial neural network model based upon product concentrations; the applicant admits, in Admitted Prior Art (see pages 14 and 15 of instant disclosure) that artificial neural network models showed a high degree of success in correlating process conditions and desired product yields. In view of said disclosure, and since the application is silent to unexpected results, an ordinary artisan would have used data processing means implementing an artificial neural network model based upon product concentrations in the system of Chittick in view of Moriarty et al., and used said processing means correlate operating conditions in the first and second stages or process conditions of at least 3 gas phase products to the desired product yields, since doing so would amount to nothing more than a use of a known controller for its intended use in a known environment to accomplish entirely expected result.

Regarding limitations recited in claims 14-16 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not

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differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

4. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chittick (USP 4,421,524) in view of Moriarty et al. (USP 5,993,751), Chambert (USP 4,232,633) Bayer (USP 5,114,541), and the Admitted Prior Art, and further in view of Cawfield (USP 5,519,605).

Regarding claim 20, Chittick in view of Moriarty et al., Chambert and Bayer, and further in view of the Admitted Prior Art discloses all of the claims limitations as set forth above in claim 19, but the reference does not explicitly disclose wherein said data processing means is programmed to operate in a closed loop.

Cawfield teaches a data process model utilizing a closed loop mode to give rise to adaptive control (C21/L34-55) and it would have been obvious to one of ordinary skill in the art to modify Chittick in view of Moriarty et al., Chambert and Bayer, and further in view of the Admitted Prior Art with Cawfield for the purpose to provide an adaptive algorithm that can perform multi-steps in a power generating apparatus without the intervention of an operator (C21/L34-55).

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

### ***Response to Arguments***

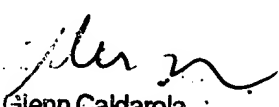
Applicant's arguments with respect to claims 10 and 12-17 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to <sup>Vinit Patel</sup>~~Basia Ridley~~ whose telephone number is (571) 272-0856. The examiner can normally be reached on Monday through Thursday, 9:00 AM to 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Glenn Caldarola  
Supervisory Patent Examiner  
Technology Center 1700